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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/854,153	05/11/2001	Laurence J. Newell	20852-05133	9449

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EXAMINER

BELLO, AGUSTIN

ART UNIT - PAPER NUMBER

2633

DATE MAILED: 09/30/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/854,153

Applicant(s)

NEWELL ET AL.

Examiner

Agustin Bello

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4-6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1-12 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-35 of copending Application No. 09/569,761. Although the conflicting claims are not identical, they are not patentably distinct from each other because both applications recite an optical fiber communications system including an optical fiber, a method for compensating for dispersion effects in the optical fiber, the method comprising: receiving at least two low-speed channels, each low-speed channel allocated a different frequency band of an optical fiber communications system for transmission across the communications system; for each low-speed channel, estimating an attenuation caused by dispersion resulting from transmission of the low-speed channel across the optical fiber in the frequency band allocated to the low-speed channel; adjusting a power of each low-speed channel to compensate for the estimated attenuation caused by dispersion; and frequency division multiplexing the power-adjusted low-speed channels to produce an electrical high-speed channel for transmission across the communications system.

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Furthermore, both applications recite estimating gain in the system caused by chromatic dispersion or polarization mode dispersion, a variable gain block, and adjusting the gain of the low speed signals according to the estimated gain of the system. The 09/854,153 application differs from the claimed invention in that from the 09/569,761 application in that the 09/854,153 application recites a method for compensation for dispersion effects in the optical fiber while the 09/569,761 application recites a method for compensation for frequency dependent gain effects in the communication system. However, one skilled in the art would clearly have recognized that dispersion often affects signals of different frequencies in different ways, thereby making dispersion effects frequency dependent. Furthermore, the measure of gain is the ratio of the signal transmitted to the signal received thereby taking into account the various dispersion effects in the system including polarization mode dispersion and chromatic dispersion which degrade the signal received. Therefore, it is clear that the terms used in the 09/569,761 application claim a broader obvious version of the language used in the 09/854,153. The application further differs from the claimed invention in that in that the 09/854,153 recites applying a gain to the input signals that is equal in magnitude to the estimated attenuation. However, it would have been obvious to one skilled in the art at the time the invention was made to have matched the amount of gain added to the signals with the attenuation estimated attenuation in the system in order to compensate the signals of the system for the estimated attenuation. The 09/854,153 application further differs from the claimed invention in that it fails to specifically teach the use of STS signals, QAM modulated signals, two different signal data rates, and two different communication protocols. However, these types of communication signals are well known in the art and would have been obvious in the 09/854,153 application.

Furthermore, the use of different data rates and communication protocols is well known in the art. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use different data rates or communication protocols in the 09/854,153 application. The 09/854,153 application further differs from the claimed invention in that it fails to specifically teach the methods used to estimate the gain of the system in application 09/569,761. However, the methods recited in the 09/569,761 application are well known in the art and would have been obvious in the system of the 09/854,153 application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

3. Claim 7 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 15 of copending Application No. 09/853,556. Although the conflicting claims are not identical, they are not patentably distinct from each other because both applications recite an optical fiber communications system including an optical fiber, comprising: receiving low-speed channels, multiplexing of the low speed channels; and frequency division multiplexing the low-speed channels to produce an electrical high-speed channel for transmission across the communications system. The claims differs from the claimed invention in that the 09/853,556 claims an E/O converter coupled to an FDM multiplexer. However, being that the system if the 09/854,153 application is concerned with optical communication over an optical fiber, one skilled in the art would clearly recognize that the frequency division multiplexed signals would need to be converted into optical signals prior to propagation on the fiber. One skilled in the art would have been motivated to use an E/O converter in order to achieve this conversion to allow the signal to be propagating over the

optical fiber. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use an E/O converter coupled to the frequency division multiplexer to convert the multiplexed signals into optical signals prior to propagating them on the optical fiber.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bodell (U.S. Patent No. 4,768,186).

Regarding claim 1 and 7, Bodell teaches an optical fiber communications system including an optical fiber, a method for compensating for dispersion effects in the optical fiber, the method comprising: receiving at least two low-speed channels (e.g. outputs of reference numeral 1 in Figure 1), each low-speed channel allocated a different frequency band of an optical fiber communications system for transmission across the communications system (column 1 lines 25-33); adjusting a power of each low-speed channel to compensate for attenuation caused by dispersion (column 6 lines 1-8); and frequency division multiplexing (via multiplexer 6 in Figure 1) the power-adjusted low-speed channels to produce an electrical high-speed channel for transmission across the communications system. Bodell differs from the claimed invention in that Bodell fails to specifically teach for each low-speed channel, estimating an attenuation

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caused by dispersion resulting from transmission of the low-speed channel across the optical fiber in the frequency band allocated to the low-speed channel. However, Bodell appears to suggest estimating the attenuation of the communication system via a pilot carrier signal for monitoring, adjustment, and alarm purposes (column 2 lines 43-49). Furthermore, Bodell teaches that the powers of certain frequencies are improved, thereby compensating for losses experienced by certain frequencies (column 6 lines 1-23). One skilled in the art would have been motivated to estimate the attenuation of the communications system for each of the low-speed channels in order to compensate for the attenuation presented to certain channels as suggested by Bodell. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to estimate the attenuation of the communications system for each of the low-speed channels and compensate for the estimated attenuation of the communications system via adjustment of the power of each low-speed channel.

Regarding claims 2 and 8, Bodell differs from the claimed invention in that Bodell fails to specifically teach that the step of adjusting a power of each low-speed channel comprises applying a gain to each low-speed channel which is equal in magnitude to the estimated attenuation for that low-speed channel. One skilled in the art would clearly have recognized that in order to compensate for the attenuation experienced by the low speed channels one would have matched the gain applied to the low speed channels with the magnitude of the estimated attenuation, thereby nulling the attenuation levels. One skilled in the art would have been motivated to match the gain and attenuation levels in order to fully compensate the low speed channels for the estimated attenuation of the system. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to adjust the power of each low-speed

channel by applying a gain to each low-speed channel, which is equal in magnitude to the estimated attenuation for that low-speed channel.

Regarding claims 3 and 9, Bodell differs from the claimed invention in that Bodell fails to specifically teach that the step of adjusting a power of each low-speed channel comprises applying a constant gain to each low-speed channel which is equal in magnitude to the estimated attenuation at a center frequency of the frequency band allocated to the low-speed channel. However, as discussed above it would have been obvious to one skilled in the art to match the magnitude of the estimated attenuation with the magnitude of the gain applied to the low speed channels. Furthermore, one skilled in the art would clearly have recognized that since the low speed channels are divided into frequency bands, most of the attenuation would have occurred at the center frequency, thereby motivating one skilled in the art to apply a constant gain of a magnitude equal to the estimated attenuation to the center frequency of the frequency band. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to adjust the power of each low-speed channel by applying a constant gain to each low-speed channel which is equal in magnitude to the estimated attenuation at a center frequency of the frequency band allocated to the low-speed channel.

Regarding claims 4 and 10, Bodell teaches that the step of adjusting a power of each low-speed channel comprises applying a gain ramp to the low-speed channels (as seen in Figure 5).

Regarding claims 5, 6, 11, and 12 Bodell differs from the claimed invention in that Bodell fails to specifically teach that the step of estimating a gain for propagation through the optical fiber comprises estimating a gain due to chromatic dispersion or polarization mode dispersion for the frequency band allocated to the low-speed channel. However since the system

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of Bodell propagates a pilot signal which monitors the various characteristics of the transmission system and makes adjustments based on the measurements (column 2 lines 42-49), one skilled in the art would clearly have recognized that gain due to chromatic dispersion or polarization mode dispersion would have also been measured by the pilot signal, and power measurements made based upon the measurements. Furthermore, Bodell's main objective in propagating the pilot signal is to improve the quality of the signal transmission via adjustments made to certain frequencies based on monitoring results. One skilled in the art would have been motivated to measure the chromatic dispersion or polarization mode dispersion for the frequency band allocated to the low-speed channel in order to improve the quality of signal transmission. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to measure the chromatic dispersion or polarization mode dispersion for the frequency band allocated to the low-speed channel in order to estimate the gain of the communication system.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Frisch, Foschini, Lemson, Bae, Sasai, Simokat, and Darveau teach relevant art.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (703)308-1393. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703)305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

AB



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